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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,668	10/24/2003	Naveen Bali	5693P033	9966

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NETWORK APPLIANCE/BLAKELY
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EXAMINER

SETLAK, ANDREW T

ART UNIT	PAPER NUMBER
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2166

DATE MAILED: 04/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/692,668

Applicant(s)

BALI ET AL.

Examiner

Andrew Setlak

Art Unit

2166

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/24/2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

The informal drawings submitted on 10/24/2003, while acceptable for examination, fail to meet the requirements of 37 CFR 1.84 (l) & (p). Thusly, prior to an allowance formal drawings are required in compliance with 37 CFR 1.121(d). Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings.

Claim Objections

Claim 1 is objected to because of the following informalities: On line 2 of claim 1 a preposition appears to be missing between the words "plurality" and "requests". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 8, 16, 23, 24 & 30 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,055,604 (henceforth referred to by "Voigt et al.").

Claim 1 is anticipated by Voigt et al. as follows: **A method comprising:**
maintaining a log of a plurality requests in a storage server (), each of the
requests corresponding to a storage operation to be performed by the storage
server on a set of storage devices, the log including a separate log entry for each
of the requests (figure 7 [C2:L56-60] [C3:L40-42]); and including a separate
checksum in each of the log entries, each checksum for use by a checksum
algorithm in determining data integrity of the corresponding log entry (figure 7,
element 135 [C8:L15-32]).

Claim 2 is anticipated by Voigt et al. as in claim 1, **wherein the requests**
originate from a set of client devices serviced by the storage server ([C3:L40-42]
[C4:L25-29]).

Claim 8 is anticipated by Voigt et al. as in claim 1, **further comprising:**
maintaining an entry count in the log to indicate the number of log entries in the
log (figure 7, element 120); and using the checksum of one of the log entries to
determine whether the entry count is corrupted ([C9:L15-26] checking the entry's
checksum for corruption of the record entails a check of all of the data of the record,
which includes the sequence number).

Claims 16, 23, 24 & 30 are anticipated by Voigt et al. using the same rationale as
applied to claims 1, 2 & 8.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made..

Claims 3-15, 17-22 & 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Voigt et al. and U.S. Patent No. 6,880,149 (henceforth referred to as "Cronce").

Claim 3 is taught by Voigt et al. as in claim 1. However, Voigt et al. does not explicitly indicate **selecting the checksum algorithm based on a desired balance between performance and checksum strength**. Yet, Cronce teaches **selecting the checksum algorithm based on a desired balance between performance and checksum strength** (Cronce: [C5:L33-36] [C6:L56-58]).

One of ordinary skill in the art at the time of invention would have been aware of the tradeoffs involved in using any single checksum algorithm (Cronce: [C5:L31-37]). Thus, knowing that the loading of a storage system will be highly variable, and only predictable to a limited extent, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a dynamic selection schema, as in Cronce, for choosing the currently most suitable checksum algorithm for use in the log of Voigt et al..

Claim 4 is taught by Voigt et al. as in claim 1. However, Voigt et al. does not explicitly indicate **automatically selecting the checksum algorithm based on a**

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predetermined criterion. Yet Cronce teaches automatically selecting the checksum algorithm based on a predetermined criterion (Cronce: [C6:L5-8] a preference setting is a form of a predetermined criteria).

Claim 5 is taught by the combination of Voigt et al. and Cronce as in claim 4, **further comprising including an algorithm variable in the log to select the checksum algorithm from a plurality of selectable checksum algorithms, wherein said automatically selecting the checksum algorithm comprises selecting the checksum algorithm dynamically by modifying the algorithm variable during operation of the storage server (Cronce: figure 4b, element 420 [C5:L23-25]).**

Claim 6 is taught by Voigt et al. as in claim 1. However, Voigt et al. does not explicitly indicate **including an algorithm variable in the log to select the checksum algorithm from a plurality of selectable checksum algorithms; and automatically selecting the checksum algorithm dynamically by modifying the algorithm variable during operation of the storage server. Yet Cronce teaches including an algorithm variable in the log to select the checksum algorithm from a plurality of selectable checksum algorithms (Cronce: figure 4b, element 420 [C5:L23-25]); and automatically selecting the checksum algorithm dynamically by modifying the algorithm variable during operation of the storage server (Cronce: [C5:L16-17] [C5:L43-45]).**

Claim 7 is taught by Voigt et al. as in claim 1. However, Voigt et al. does not explicitly indicate **including a separate algorithm variable in each of the log entries, to specify a checksum algorithm to be used separately for each said log entry.**

Yet Cronce teaches **including a separate algorithm variable in each of the log entries, to specify a checksum algorithm to be used separately for each said log entry** (Cronce: [C5:L16-25]).

Claim 9 is taught by Voigt et al. as follows: **A method of determining data integrity in a storage appliance coupled to a set of client devices and to a set of mass storage devices in a network environment, the method comprising: receiving write requests from the client devices, the write requests requesting that the storage appliance write data to the set of mass storage devices** (Voigt et al.: [C3:L40-42] [C4:L25-29]); **saving data associated with the write requests to the set of mass storage devices at a consistency point** (Voigt et al.: figure 8 [C5:L16-46]); **maintaining a log of write requests received from the client devices since the consistency point in a non-volatile memory in the storage appliance, the log including a plurality of log entries, each of the log entries representing a separate write request** (Voigt et al.: figure 8 [C5:L16-46] [C8:L51-56]); **including a separate checksum value in each of the log entries, each said checksum value for use by a checksum algorithm in verifying the data integrity of the corresponding log entry** (Voigt et al.: figure 7, element 135 [C8:L15-32]). However Voigt et al. does not explicitly indicate **including an algorithm variable in the log to select the checksum algorithm from a plurality of selectable checksum algorithms**. Yet, Cronce teaches **including an algorithm variable in the log to select the checksum algorithm from a plurality of selectable checksum algorithms** (Cronce: figure 4b, element 420 [C5:L23-25]).

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One of ordinary skill in the art at the time of invention would have been aware of the tradeoffs involved in using any single checksum algorithm (Cronce: [C5:L31-37]). Thus, knowing that the loading of a storage system will be highly variable, and only predictable to a limited extent, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a dynamic selection schema, as in Cronce, for choosing the currently most suitable checksum algorithm for use in the log of Voigt et al..

Claims 10-15, 17-22 & 25-29 are taught by the combination of Voigt et al. and Cronce using the same rationale as applied to claims 1-9.

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Voigt et al..

Claim 31 is taught by Voigt et al. as in claim 24, **wherein the storage appliance is a network appliance** (Voigt et al.: [C1:L20-34]). It would have been notoriously obvious to one of ordinary skill in the art at the time of invention to have included network communications capabilities within the disk array data storage system of Voigt et al. since a data storage system that is not capable of communicating with the outside world would have an extremely limited functional capability, and as such one of ordinary skill in the art at the time of invention would have known to include network communication capabilities.

Conclusion


The prior art made record of on form PTO-892 and not relied upon is considered pertinent to the applicants' disclosure.


Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Setlak whose telephone number is (571) 272-4060. The examiner can normally be reached on M-F 10:00-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (571) 272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Andrew Setlak
Patent Examiner
04/12/2006


Leslie Wong
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